IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Jin Ho Park
Assignee: Samsung Electronics Co., Ltd.
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Title: MULTIPLE OUTPUT DC/DC VOLTAGE CONVERTERS

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BRIEF ON APPEAL PURSUANT TO 37 C.F.R. §41.37

Responsive to the "Notification of Non-Compliance with 37 CFR 1.192(c)" dated 16 October 2007 and pursuant to the Notice of Appeal dated February 10, 2003, please accept herewith Applicant's Amended Brief on Appeal.

The fee for filing the brief required by 37 CFR § 41.20(b) (2) has previously been paid.

Respectfully submitted,

Reg No 43,779

Howard R. Popper, Counsel
Reg. No. 19,208
MacPherson Kwok Chen & Heid LLP
2033 Gateway Place, Suite 400
San Jose, CA 95110
Tel. (408) 392-9250

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I. Real Party In Interest:

Samsung Electronics Co., Ltd. is the real party in interest.

II. Related Appeals And Interferences:

There are no related appeals or interferences.

III. Status Of Claims:

Claims 10-18 are pending in the application;

No claims are allowed;

Claims 1-9 were canceled;

Claims 10-18 are rejected.

Claims 10-18 are appealed.

IV. Status of Amendments:

No amendments were presented after the Final Rejection of 12 November 2002.

V. Summary of Claimed Subject Matter:

Claim 10 is directed to a DC/DC converter (5, Fig. 6, pages 8-9) having a transformer including a primary coil (T61) and a secondary coil (T62, 63) and a switch (Q61) connected to primary coil (T61) that controls current switching; a first DC output voltage (VDD) being generated from the primary coil (T61) and a second DC output voltage (Von or Voff) being generated from the secondary coil (T62 or T63, page 8, lines 4 to page 10, lines 6).

Claim 11, depending on claim 10, further recites a first rectifier (D63, Fig. 6, pages 8-9) and a second rectifier (D61 or D62), wherein the primary coil (T61) is connected between an input voltage (Vin) and the switch (Q61), the first rectifier (D63) connected to the primary coil (T61) to generate the first DC output voltage (VDD) and the second rectifier (D61 or D62) connected to the secondary coil (T62 or T63) to generate the second DC output voltage (Von or Voff).

Claim 12, depending on claim 11 further recites a first rectifier comprising a first diode (D63, Fig. 6, pages 8-9) and a first capacitor (C63) and wherein the second rectifier comprises a second diode (D61 or D62) and a second capacitor (C61 or C62).

Claim 13 depending on claim 10 further recites an inductor (L71, Fig 7, page 10, line 14 to page 12 line 10) coupled across the primary coil (T71), wherein the first DC output voltage (VDD) is generated from the primary coil (T71) and from the inductor (L71).

Claim 14. (Independent, directed to a DC/DC converter comprising: a

transformer including a primary coil (T71, Fig. 7, page 10, line 14 to page 12 line 10) and a secondary coil (T72, 73); an inductor (L71,) coupled across the primary coil (T71) and a switch (Q71) connected to the inductor (L71) and that controls current switching therein; a first DC output voltage (VDD) generated from the inductor (L71) and a second DC output voltage (Von or Voff) generated from the secondary coil (T72 or T73).

Claim 15, depending on claim 14, further comprises a first (D73) and a second (D71 or D72) rectifier (Fig. 7, page 10, line 14 to page 12 line 10) and an inductor (L71) that are connected between an input voltage (Vin) and a switch (Q71) wherein the first rectifier (D73) generates a first output voltage (VDD) and the second rectifier (D71 or D72) is connected in the secondary coil (T72 or T73).

Claim 16, depending on claim 15, recites additional limitations that a first rectifier comprises (Fig. 7, page 10, line 14 to page 12 line 10) a first diode (D73) and a first capacitor (C73) and a second rectifier comprises a second diode (D72) and a second capacitor (C72).

Claim 17, depending on claim 10, recites additional limitations (Fig. 7, page 10, line 14 to page 12 line 10) that a an input voltage port (Vin) that is connected to the primary coil (T61).

Claim 18, depending on claim 14, recited additional limitations (Fig. 7, page 10, line 14 to page 12 line 10) that an input voltage port (Vin) that is connected to the primary coil (T61) provides a DC input to the primary coil.

VI. Grounds of Rejection to be Reviewed on Appeal

Whether pending Claims 10-18 are unpatentable under 35 USC §102(b) as being anticipated by U.S. Patent 5,325,283 to Farrington et al.

VII. ARGUMENT

A. As to claim 10, 12, 13,14 and 16:

Farrington '283 is a single output DC/DC converter that does not provide any output voltage from the primary coil circuit of a transformer, as required in applicant's above claims. Contrary to the Examiner's assertion (Final Office action, p.2, paragraph 2), there is no teaching or suggestion in Farrington to generate a first output voltage from the primary coil of a transformer whose secondary also generates an output voltage. The Examiner's assertion that Farrington produces an output voltage at what is obviously an input capacitor C_{IN} is simply wrong. Farrington clearly shows his intention to have the output voltage taken from the secondary winding of transformer 10 drive the load identified as load resistor RL.

The Examiner, at page 4, paragraph 3 of the Final action, further asserted:

> Farrington discloses a first DC output voltage [Fig. 2, at C_{IN}] of the multiple DC output voltage DC/DC converter is generated from the primary coil and a second DC output voltage [Fig. 2, at S_3 & S_4] of the multiple DC output voltage DC/DC converter is generated from the secondary coil (see Column 2, Line 53 - Column 3, Line 16). There are clearly and inherently voltages generated across the above cited circuits when Farrington's converter is in operation.

The Examiner statement that Farrington's "inherently generated" voltages (across C_{IN}) are output voltages is unwarranted when, in fact, the voltage across C_{IN} is clearly not an output voltage. Moreover, Farrington teaches that his output voltage is to be taken across load resistor RL connected in the secondary circuit of his transformer 10. Farrington so states, *inter alia* in 1 claim 1, that the load impedance is coupled to the secondary winding of the transformer. (See Figs 1 and 2 of Farrington, next

page).

Further, the Farrington transformer's primary winding circuit and C_{IN} is part of a resonant circuit whose operation would be disturbed by the Examiner's reconstruction that requires the voltage across C_{IN} to be used to supply a load. Accordingly, the Examiner's assertions are contrary to fact and a rejection so based should not be permitted to stand. For at least these reasons, independent Claims 10 and 14, and dependent Claims 12, 13 and 16 are patentable over Farrington.

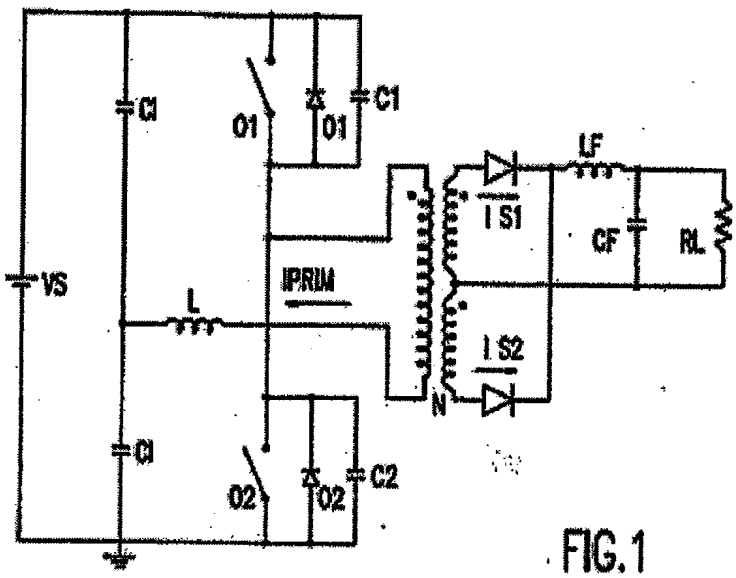

FIG.1
PRIOR ART

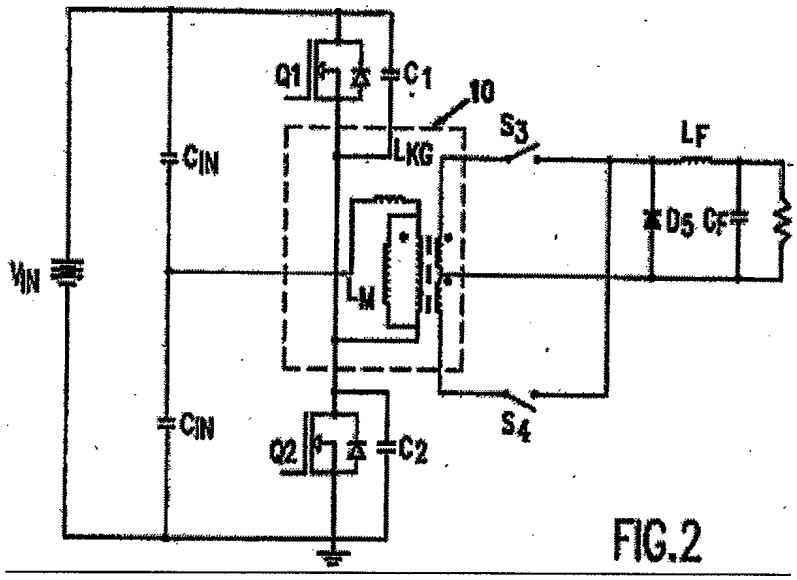

FIG.2

B. As to claims 11 and 15:

The Examiner had rejected these claims stating: "Farrington discloses a first rectifier Fig. 2, D2 & C2] and a second rectifier [Fig. 2, D5 & CF] wherein the primary coil is connected between an input voltage and the switch, wherein the first rectifier is connected to the primary coil to generate the first DC output voltage of the multiple DC output voltage DC/DC converter ".

Contrary to the Examiner's assertion, Farrington does not, in fact, disclose a multiple output voltage DC/DC converter that connects a rectifier to the primary coil to generate the first DC output voltage. The first DC output voltage recited in claim 11 has its antecedent basis in claim 10 which requires the first DC output voltage to be taken on the primary side of the transformer. To wit: " a first DC output voltage of the multiple DC output voltage DC/DC converter is generated from the primary coil ..."

The Examiner further asserted (Final action, page 4, paragraph 3, second paragraph) that there is a diode (unlabeled) shunted across switch Q1.

However, this diode is not connected between the primary of the transformer and the input capacitor C_{IN}. Even if it was so connected, the diode cannot be regarded as a first rectifier that is connected to the primary coil to generate the first DC output voltage because it is shunted across the switch Q1 so that it would not appear to generate a DC output voltage from the switch Q1.

For at least these reasons, dependent Claims 11 and 15 are separately patentable.

C. As to dependent claims 17 and 18:

The Examiner had rejected these claims on the basis that Farrington disclosed "an input voltage port [Fig. 2, at Q1 & Q2] that is connected to the primary coil of to provide a DC voltage [Fig. 2, at C1 & C2] to the primary coil (see col. 2, line 53- col. 3, line 16)." However this may be, claim 17 depends from claim 10 and carries with it the antecedent limitations that the output voltage is taken from the primary coil. Further, Claim 18 carries with it the antecedent limitations of claim 14 that the output voltage is taken from the primary coil. Accordingly, these claims distinguish over the Farrington reference which produces no output voltage from the primary coil circuit.

CONCLUSION

The Final Official Action improperly asserted that "internal voltages", otherwise unexplained and unidentified in the Farrington disclosure, constituted "output" voltages defined by applicant's claims. Such an assertion is contrary to the plain meaning of the claims, the plain meaning of Farrington and the plain meaning of the circuit diagram. For at least these

reasons, Appellant respectfully requests reversal of the Final Official Action and allowance of the pending claims 11-18.

VIII. Claims Appendix

10. A multiple DC output voltage DC/DC converter comprising:

a transformer including a primary coil and a secondary coil that are coupled to one another by magnetic induction; and

a switch that is connected to the primary coil and that controls current switching therein;

wherein a first DC output voltage of the multiple DC output voltage DC/DC converter is generated from the primary coil and a second DC output voltage of the multiple DC output voltage DC/DC converter is generated from the secondary coil.

11. A converter according to Claim 10 further comprising a first rectifier and a second rectifier, wherein the primary coil is connected between an input voltage and the switch, wherein the first rectifier is connected to the primary coil to generate the first DC output voltage of the multiple DC output voltage DC/DC converter therefrom and wherein the second rectifier is connected to the secondary coil to generate the second DC output voltage of the multiple DC output voltage DC/DC converter therefrom.

12. A converter according to Claim 11 wherein the first rectifier comprises a first diode and a first capacitor and wherein the second rectifier comprises a second diode and a second capacitor.

13. A converter according to Claim 10 further comprising an inductor that is coupled across the primary coil, wherein the first DC output voltage of the

multiple DC output voltage DC/DC converter is generated from the primary coil and from the inductor.

14. A multiple DC output voltage DC/DC converter comprising:

a transformer including a primary coil and a secondary coil that are coupled to one another by magnetic induction;

an inductor that is coupled across the primary coil; and

a switch that is connected to the inductor and that controls current switching therein; wherein a first DC output voltage of the multiple DC output voltage DC/DC converter

is generated from the inductor and a second DC output voltage of the multiple DC output

voltage DC/DC converter is generated from the secondary coil.

15. A converter according to Claim 14 further comprising a first rectifier and a second rectifier, wherein the inductor is connected between an input voltage and the switch, wherein the first rectifier is connected to the inductor to generate the first DC output voltage of the multiple DC output voltage DC/DC converter therefrom and wherein the second rectifier is connected to the secondary coil to generate the second DC output voltage of the multiple DC output voltage DC/DC converter therefrom.

16. A converter according to Claim 15 wherein the first rectifier comprises a first diode and a first capacitor and wherein the second rectifier comprises a second diode and a second capacitor.

17. A converter according to Claim 10 further comprising:

an input voltage port that is connected to the primary coil to provide a DC input voltage to the primary coil.

18. A converter according to Claim 14 further comprising:

an input voltage port that is connected to the primary coil to provide a DC input voltage to the primary coil.

IX. Evidence Appendix: (None)

X. Related Proceedings Appendix: (None)